**Coastal Observation Technology System Project Summary – 2006**

**Project Name/Title:** Center for Integrated Marine Technologies (CIMT)

**Date Project Initiated:** July 2002

**Recipient Institutions:** University of California Santa Cruz; Moss Landing Marine Laboratories; Naval Postgraduate School; Monterey Bay Aquarium Research Institute; Jet Propulsion Laboratory; Cornell University; University of California Davis

**Primary Contact:**
Gary Griggs
Earth and Marine Sciences
University of California Santa Cruz
Santa Cruz, CA 95064
Phone: (831) 459-5006
Fax: (831) 459-4882
E-mail: griggs@ucsc.edu

**Project Web Site:** http://cimt.ucsc.edu

**Brief Project Summary:** The Center for Integrated Marine Technologies' (CIMT) mission is to create a coastal ocean observing and forecasting system that provides a scientific basis for the management and conservation of the Monterey Bay National Marine Sanctuary, and serves as a model for all of California's coastal marine resources and the U.S. Integrated Ocean Observing System (IOOS).

Specifically, CIMT is using off the shelf and newly developed technologies to investigate the linkages between detailed physical oceanographic measurements of upwelling with assessments of the availability of critical nutrients to determine the extent to which these predict the distribution, abundance, and species composition of phytoplankton and zooplankton, and the distribution, abundance, and species composition of top-level consumers including fish, seabirds, marine mammals, and sea turtles. These data are being incorporated into hindcast and nowcast/forecast models of the marine environment.

This comprehensive approach will serve as a model for an integrated coastal ocean observing system and establish the scientific basis for effective monitoring and management of coastal fisheries and protected resources, especially for the Monterey Bay National Marine Sanctuary. It is a pilot project within the Central and Northern California Ocean Observing System (CeNCOOS; http://www.cencoos.org).

**Accomplishments to Date:**

- California Department of Health Services Biotoxins Program receives and uses population abundance and toxin analysis of toxic algal species from CIMT.
- Development of “rapid-response” remote sensing products with Dr. Richard Stumpf (NOAA) for the identification of potential HAB problems in California.

- CIMT data have been used in models, presentations, and reports on the food habits of sea lions and pinniped impacts on salmon stocks for federal agencies
- CIMT personnel and data sets have been used in the development of Sanctuary Management Plan. We have developed working relationships with the Channel Islands, Gulf of the Farallones, and Cordell Banks National Marine Sanctuaries and the Point Reyes Bird Observatory to help in future management decisions.
- Direct collaboration with the developing regional Integrated Ocean Observation System (IOOS) the Central and Northern California Ocean Observation System.
- COCMP coastal current HF radar system is replicating CIMT technology, and taking over operational control of these efforts.
- CIMT acted as the Regional Data Center for the Central California coast while participating in the NOAA IOOS Interoperability Demonstration to create web accessible maps of hourly sea surface temperatures.
- CIMT provides support, dissemination, and validation for remote sensing products in collaboration with NOAA, PFEL, the Tagging of Pacific Pelagics (TOPP) program, and the Monterey Bay Aquarium. This partnership includes public data access, dissemination to resource managers, and outreach.
- The Seymour Marine Discovery Center (located at UCSC Long Marine Laboratory) is bringing CIMT data to the general public, particularly teachers and K-12 students.

**Current Year Objectives (Year 4):**

- Our primary objective for Year 4 is to focus on end-user needs and enhanced visibility. We will focus on three IOOS objectives: (1) ecosystem effects of climate variability; (2) ocean health; (3) protecting and sustaining marine living resources.
- For remote sensing, our primary goal is to continue our successful collaborations with national backbone partners and ensure continued access to the remote sensing data by CIMT partners and end users, including continued validation and product development.
- For shipboard, HF Radar, and mooring activities, we propose to maintain the present observational network in Monterey Bay and focus on integrating data sets and developing modeling capabilities, including continued use of marine mammals as sensor platforms.
- We will institute a new “beach health” component at the request of CIMT endusers, in partnership with Surfrider and CCLEAN.
- The modeling and synthesis component of CIMT proposes to significantly enhance and extend our capability by moving from a physical oceanographic hindcast capability to a nowcast/forecast system. We will continue to ensure our data meet all DMAC requirements, and make all measurements and products available through our database, visualization, and modeling components.
- An operational wind product, developed from end-user surveys, will be instituted. A short-term current forecast will also be developed.
- Goals and objectives of the outreach component include the continued identification of end user groups, maintaining and expanding outreach tools to

address end user needs, identify gaps in knowledge to further expand CIMT's ocean observing capabilities, and train end users on CIMT products.

**Partners:** Gary Griggs, Project Chair, UCSC; Don Croll, Ship Survey, UCSC; Raphael Kudela, Remote Sensing; Chris Edwards, UCSC, and Yi Chao, JPL, Modeling; Jeff Paduan, HF Radar, NPS; Francisco Chavez, Mooring, MBARI; Rondi Robison, Outreach, UCSC; Ken Bruland, UCSC; Mary Silver, UCSC; Dan Costa, UCSC; Baldo Marinovic, UCSC; Mark Carr, UCSC; Chris Edwards, UCSC; Leslie Rosenfeld, NPS; Jim Harvey, MLML; Scott Benson NOAA/NMFS/SWFSC; Christopher Clark, Cornell University and John Largier, UC Davis